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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/665,938

09/17/2003

Connie Pin-Chin Wang

H1881

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7590

01/05/2005

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EXAMINER

DANG, PHUC T

ART UNIT

PAPER NUMBER

2818

DATE MAILED: 01/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/665,938

Applicant(s)

WANG ET AL.

Examiner

PHUC T DANG

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 14-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 9, 11 and 13 is/are rejected.
- 7) ☒ Claim(s) 5-8, 10 and 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 021304.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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## **DETAILED ACTION**

### **Election/Restrictions**

1. Application's election filed on November 26, 2004 has been considered.

In election, Applicants elected without traverse of Group I (claims 1-13) drawn to a method for manufacturing a semiconductor component and cancel Group II (claims 14-26).

Applicants have the right to file a divisional application covering the subject matter of the non-elected claims.

### **Oath/Declaration**

2. The oath/declaration filed on September 17, 2003 is acceptable.

### **Information Disclosure Statement**

3. The office acknowledges receipt of the following items from the applicant:

Information Disclosure Statement (IDS) filed on February 13, 2004.

### **Specification**

4. The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### **Claim Rejections - 35 USC § 102**

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was

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commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-4, and 9, 11 and 13 are rejected under 35 U.S.C. 102 (b) as being anticipated by Alers et al., hereinafter "Alers" (U.S. Patent No. 6,320,244 B1).

Regarding claims 1-4, 9 and 11, Alers discloses a method for manufacturing a semiconductor component, comprising:

- providing a semiconductor substrate (30, Fig. 4) having a major surface;
- forming a dielectric material (38 and 42, Fig. 4) over the major surface;
- forming an opening (56, Fig. 4) in the dielectric material, the opening having sidewalls (Fig. 4);

- lining the opening with a barrier layer (44, Fig. 6); and

- forming a multi-metal seed layer (46, Fig. 6) which reducing a first metal oxide layer (64, Fig. 2) on the barrier layer (44, Fig. 2) and a second metal oxide layer (66, Fig. 2) on the first metal oxide layer (64, Fig. 2) at a temperature of at least 150 degrees Celcius; and

- forming a layer of copper (48, Fig. 6) on the multi-metal seed layer (46, Fig. 6) [col. 6, lines 50-col. 7, lines 47].

6. Alers discloses the claimed invention except for the process parameters as claimed in claim 13 having a thickness of less than 400 Angstroms for the multi-metal seed layer. However, the

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selection of the claimed process parameters would have been obvious to one having ordinary skill in the art at the time the invention was made to improve a method for manufacturing a semiconductor device, since it is well settled that when the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

#### **Allowable Subject Matter**

7. The following is a statement of reason for the indication of allowable subject matter:

Claims 5-8, 10 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

None of the Prior Art made of records does not disclose the first metal oxide layer and the second metal oxide layer include using atomic layer deposition as cited in claims 5-6 and the first metal oxide layer and the second metal oxide layer include using a metal oxide selected from the group of metal oxides consisting of copper oxide, tin oxide, silver oxide and zinc oxide as cited in claims 7-8 and first metal oxide layer comprises copper oxide and the second metal oxide layer comprises tin oxide and the third metal oxide layer comprises copper oxide layer as cited in claim 10 and the multi-metal seed layer includes using a metal selected from the group of metals consisting of copper, tin, silver, and zinc as cited in claim 12.

#### **Conclusion**

8. Applicants are advised to cancel the non-elected claims (claims 14-26) in response to the next Office action if the application is considered to be allowed.

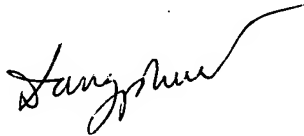
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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuc T. Dang whose telephone number is (571) 272-1776. The examiner can normally be reached on 8:00 am-5:00 pm.

10. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571) 272-1787. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and After Final communications.

11. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Phuc T. Dang

PD 

Primary Examiner

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